AMENDMENTS TO THE CLAIMS

Claims 1-49 (Cancelled)

50. (Previously Presented) An X-ray exposure apparatus, comprising:

a first stage X-ray mirror, and

a second stage X-ray mirror, wherein

α represents an angle of oblique incidence of an X-ray incident on said first stage X-ray mirror and said second stage X-ray mirror,

$L\alpha$ represents a distance between said first and second stage X-ray mirrors, as seen along an x-axis corresponding to a direction of the X-ray incident on said first stage X-ray mirror, $L\alpha$ has a same direction of an optical axis of the X-ray incident on said first stage X-ray mirror,

D represents a distance from incidence of an optical axis of the X-ray incident on said first stage X-ray mirror to said second stage X-ray mirror, and has a direction of an axis orthogonal to the optical axis of the X-ray incident on said first stage X-ray mirror and orthogonal to a plane defined by the optical axis of the X-ray incident on said first stage mirror and an X-ray reflected from said first stage mirror, and

said α and $L\alpha$ are changed to satisfy a relationship $D = L\alpha \times \tan(2\alpha)$, whereby

respective optical axes of X-rays have substantially identical directions, and

a spectral distribution of an X-ray outgoing from said second stage is changed, wherein

the direction of the optical axis of the X-ray incident on said first stage X-ray mirror is substantially identical to a direction of the optical axis of the X-ray output from the second stage X-ray mirror.

51. (Currently Amended) An X-ray exposure apparatus[[.]], comprising:

a first stage X-ray mirror,

a second stage X-ray mirror, and

a third stage X-ray mirror, wherein

α represents an angle of oblique incidence of an X-ray incident on said first stage X-ray mirror and said third stage X-ray mirror,

2α represents an angle of oblique incidence of an X-ray incident on said second stage X-ray mirror,

L represents a distance between said first and second stage X-ray mirrors and a distance between said second and third stage X-ray mirrors, as seen along an x-axis corresponding to a direction of the X-ray incident on said first stage X-ray mirror, L has a same direction of an optical axis of the X-ray incident on said first stage X-ray mirror,

$D\alpha$ represents a distance from incidence of an optical axis of the X-ray incident on said first stage X-ray mirror to said second stage X-ray mirror, and has a direction of an axis orthogonal to the optical axis of the X-ray incident on said first stage X-ray mirror and orthogonal to a plane defined by the optical axis of the X-ray incident on said first stage mirror and an X-ray reflected from said first stage mirror, and

said α and $D\alpha$ are changed to satisfy a relationship $D\alpha = L \times \tan(2\alpha)$, whereby respective optical axes of X-rays have substantially identical directions, and

a spectral distribution of an X-ray outgoing from said third stage is changed, wherein

the direction of the optical axis of the X-ray incident on said first stage X-ray mirror is substantially identical to a direction of the optical axis of the X-ray output from the third stage X-ray mirror.

52. (Previously Presented) An X-ray exposure apparatus, comprising:

a first stage X-ray mirror,

a second stage X-ray mirror,

a third stage X-ray mirror, and

a fourth stage X-ray mirror, wherein

α represents an angle of oblique incidence of an X-ray incident on each of said first, second, third, and fourth stage X-ray mirrors,

L represents a distance between said first and second stage X-ray mirrors and a distance between said third and fourth stage X-ray mirrors, as seen along an x-axis corresponding to a direction of the X-ray incident on said first stage X-ray mirror, L has a same direction of an optical axis of the X-ray incident on said first stage X-ray mirror,

$D\alpha$ represents a distance from incidence of an optical axis of the X-ray incident on said first stage X-ray mirror to said third and fourth stage X-ray mirrors, and has a direction of an axis orthogonal to the optical axis of the X-ray incident on said first stage X-ray mirror and orthogonal to a plane defined by the optical axis of the X-ray incident on said first stage mirror and an X-ray reflected from said first stage mirror, and

said α and $D\alpha$ are changed to satisfy a relationship $D\alpha = L \times \tan(2\alpha)$, whereby respective optical axes of X-rays have substantially identical directions, and

a spectral distribution of an X-ray outgoing from said fourth stage is changed, wherein

the direction of the optical axis of the X-ray incident on said first stage X-ray mirror is substantially identical to a direction of the optical axis of the X-ray output from the fourth stage X-ray mirror.

53. (Previously Presented) An X-ray exposure apparatus, comprising:

a first stage X-ray mirror,

a second stage X-ray mirror,

a third stage X-ray mirror, and

a fourth stage X-ray mirror, wherein

α represents an angle of oblique incidence of an X-ray incident on each of said first and fourth stage X-ray mirrors,

β represents and angle of oblique incidence of an X-ray incident on each of said second and third stage X-ray mirrors,

$L\alpha$ represents a distance between said first and second stage X-ray mirrors and a distance between said third and fourth stage X-ray mirrors, as seen along an x-axis corresponding to a direction of the X-ray incident on said first stage X-ray mirror,

$L\beta$ represents a distance between said second and third stage X-ray mirrors, as seen along said x-axis,

D represents a distance between said second and third stage X-ray mirrors, as seen along a y-axis corresponding to a direction perpendicular to said x-axis, and

said α, β, $L\alpha$ and $L\beta$ are changed to satisfy a relationship $D = 2 \times L\alpha \times \tan(2\alpha) = L\beta \times \tan2(\beta- \alpha)$, whereby

respective optical axes of X-rays have substantially identical directions, and

a spectral distribution of an X-ray outgoing from said fourth stage is changed, wherein

the direction of the optical axis of the X-ray incident on said first stage X-ray mirror is substantially identical to a direction of the optical axis of the X-ray output from the second stage X-ray mirror.

54. (Currently Amended) An X-ray exposure method employing an X-ray exposure apparatus including two X-ray mirrors including first and second stage X-ray mirrors, comprising the steps of

changing a spectral distribution, rendering substantially identical a direction of an optical axis of an X-ray incident on said first stage X-ray mirror and a direction of an optical axis of an X-ray outgoing from said second stage X-ray mirror, and also changing a spectral distribution of the X-ray outgoing from said second stage X-ray mirror, by changing α and $L\underline{\alpha}$ to satisfy a relationship $D = L\underline{\alpha} \times \tan(2\alpha)$, wherein α represents an angle of oblique incidence of an X-ray incident on said first and second stage X-ray mirrors, $L\underline{\alpha}$ represents a distance between said first and second stage X-ray mirrors as seen along an x axis corresponding to a direction of the X-ray incident on said first stage X-ray mirror, and D represents a distance from incidence of an optical axis of the X-ray incident on said first stage X-ray mirror to said second stage X-ray mirror, as seen along a y axis corresponding to a direction perpendicular to said x axis;

causing an X-ray incident on said first stage X-ray mirror; and

exposing to an X-ray outgoing from said first stage X-ray mirror via said second stage X-ray mirror.

55. (Currently Amended) An X-ray exposure method employing an X-ray exposure apparatus including three X-ray mirrors including first, second, and third stage X-ray mirrors, comprising the steps of:

changing a spectral distribution, rendering substantially identical an optical axis of an X-ray incident on said first stage X-ray mirror and an optical axis of an X-ray outgoing from said third stage X-ray mirror, and also changing a spectral distribution of the X-ray outgoing from said third stage X-ray mirror, by changing α and [[L]] $D\underline{\alpha}$ to satisfy a relationship $D\underline{\alpha} = L \times \tan(2\alpha)$, wherein α represents an angle of oblique incidence of an X-ray incident on said first and third stage X-ray mirrors, 2α represents an angle of oblique incidence of an X-ray incident on said second stage X-ray mirror, L represents a distance between said first and second stage X-ray mirrors and a distance between said second and third stage X-ray mirrors, as seen along an x axis corresponding to a direction of the X-ray incident on said first stage X-ray mirror, and $D\underline{\alpha}$ represents a distance from incidence of an optical axis of the X-ray incident on said first stage X-ray mirror to said second stage X-ray mirror, as seen along a y axis corresponding to a direction perpendicular to said x axis;

causing an X-ray incident on said first stage X-ray mirror; and

exposing to an X-ray outgoing from said first stage X-ray mirror via said second and third stage X-ray mirrors.

56. (Currently Amended) An X-ray exposure method employing an X-ray exposure apparatus including four X-ray mirrors including first, second, third, and fourth stage X-ray mirrors, comprising the steps of:

changing a spectral distribution, rendering substantially identical an optical axis of an X-ray incident on said first stage X-ray mirror and an optical axis of an X-ray outgoing from said fourth stage X-ray mirror, and also changing a spectral distribution of the X-ray outgoing from said fourth stage X-ray mirror, by changing α and [[L]] $\underline{D\alpha}$ to satisfy a relationship $D\underline{\alpha} = L \times \tan(2\alpha)$, wherein α represents an angle of oblique incidence of an X-ray incident on each of said four X-ray mirrors, L represents a distance between said first and second stage X-ray mirrors and a distance between said third and fourth stage X-ray mirrors, as seen along an x axis corresponding to a direction of the X-ray incident on said first stage X-ray mirror, and $D\underline{\alpha}$ represents a distance from incidence of an optical axis of the X-ray incident on said first stage X-ray mirror to said third and fourth stage X-ray mirrors, as seen along a y axis corresponding to a direction perpendicular to said x axis;

causing an X-ray incident on said first stage X-ray mirror; and

exposing to an X-ray outgoing from said first stage X-ray mirror via said second to fourth stage X-ray mirrors.

57. (Currently Amended) An X-ray exposure method employing an X-ray exposure apparatus including four X-ray mirrors including first, second, third, and fourth stage X-ray mirrors, comprising the steps of:

changing a spectral distribution, rendering substantially identical an optical axis of an X-ray incident on said first stage X-ray mirror and an optical axis of an X-ray outgoing from said fourth stage X-ray mirror, and also changing a spectral distribution of the X-ray outgoing from said fourth stage X-ray mirror, by changing α, β, $L\alpha$, and $L\beta$ to satisfy a relationship $D = 2 \times L\alpha \times \tan(2\alpha) = L\beta \times \tan2(\beta - \alpha)$, wherein α represents an angle of oblique incidence of an X-ray

incident on each of said first and fourth stage X-ray mirrors, β represents an angle of oblique incidence of an X-ray incident on each of said second and third stage X-ray mirrors, $L\alpha$ represents a distance between said first and second stage X-ray mirrors and a distance between said third and fourth stage X-ray mirrors, as seen along an x axis corresponding to a direction of the X-ray incident on said first stage X-ray mirror, $L\beta$ represents a distance between said second and third stage X-ray mirrors, as seen along said x axis, and D represents a distance between said second and third stage X-ray mirrors, as seen along a y axis corresponding to a direction perpendicular to said x axis;

causing an X-ray incident on said first stage X-ray mirror; and

exposing to an X-ray outgoing from said first stage X-ray mirror via said second to fourth stage X-ray mirrors.